



## **Philosophical Transactions**

Please note: Due to an error in the print volume, the page numbering in this article may contain either page numbering skips, or page numbering repetitions, or both. However, the article content is presented in its entirety and in correct reading order.

**Please click on "Next Page" (at the top of the screen) to begin viewing the article.**

round and a little flatted; of an olive colour, marked with red specks, like coagulated blood; and so polished and shining, that it reflected Images. It was wrapped up in a membrane full of fat, and fastned on both ends to the back-bone, over against the Kidneys. Though this Horse had been dead twelve hours before it was opened; yet was it still very warm, and kept that warmth above six hours after it was opened. This Stone is kept among the Rarities of Signor Bartolini, an Italian Riding-master.

*An Account of some Books.*

I. *An ESSAY about the Origine and Vertues of GEMS; by the Honourable Robert Boyle Esquire, Fellow of the R. Society. Printed at London, 1672. in 8<sup>o</sup>.*

THE design of the Noble Author of this excellent Treatise being, to propose and historically to illustrate therein some conjectures of his about the Consistence of the Matter of Precious Stones, and the Subjects wherein their chief vertues reside; he comprises the substance of all in these *two* particulars: *First*, That many of these Gems, and the Medical Stones, either were once *fluid* Bodies, as the Transparent ones, or in part made up of such substances as were once fluid. *Secondly*, That many of the *real* vertues of such Stones may be probably derived from the *mixture* of *Metalline* and other mineral substances, which are usually (though unsuspectedly) incorporated with them; and that the *greatness* of the Variety and Efficacy of those vertues may be attributed to some happy concurrent circumstances of that commixture.

The *first* of these Heads relateth properly to the *Origine* of *Gems*: the *second*, partly to that, and partly to the *kinds* and *degrees* of their *vertues*.

To countenance the former, the Author alledges for his *first* Argument several Considerations, taken first from the Diaphaneity of Gems; secondly, their external figuration; thirdly, their internal texture; fourthly, their Colours that seem to be adventitious and imparted by some coloured Mineral Juice, or some tinging Mineral exhalation, whilst the Stone was either

in *solutis principiis*, or of a texture penetrable by mineral fumes; fifthly, from the Heterogeneous matter included in Solid Gems, both transparent, and opacous, though very rarely in the former kind; sixthly, from the proofs, to be met with *below* in the second member of the Authors Hypothesis; wherein it appears, that several even of the Transparent Gems have metalline or other extraneous mineral bodies mingled with them *per minima*; which mixture is reasonably supposed to have been made, when the mingled bodies were in a fluid form.

These considerations being dispatch't, they are follow'd with a very Instructive Answer to a main Objection, raised from the exquisite uniformity of shape, so admired in Gems, (especially the Prismatical one in Crystal,) and thought to demonstrate their being formed by a Seminal and Geometrizing Principle.

This done, the Author proceeds to the *second* of those Grand Arguments, whereon his Hypothesis was grounded. And this is built upon the *weight* of some Gems, which being greater than that which seems to belong to them as hard and transparent Stones, he thinks he may probably derive it from Metallin or Mineral mixtures. Where he shews, how he came to know the truth of what he here delivers, and what standard he pitch't upon whereby to make a probable estimate of the weight of Gems; which was by finding out the Ponderousness of Crystal in reference to Water.

To this he subjoyns a *third* Argument, taken from hence, that out of divers Medicinal Stones, and even out of some fine Gems, real and corporeal Metals or other Mineral substances may be extracted: which Argument he prosecutes largely in the *second Section*; where he delivers

A Conjecture about the *Causes* of the *Virtues* of Gems; which is, That the Author conceives, that some (at least) of the *real* Virtues (the many *fabulous* ones being by him justly exploded) of divers Gems may be derived from this; That whilst they were in a fluid form (or at least not yet hardned,) the Petrescent substance was mingled with some Mineral solution or tincture, or with some other impregnated liquor, and that these were afterwards con-coagulated, or united and hardned into one Gem. And as divers of the Virtues of Gems may be in

a general way deduced from the Commixture of these Mineral Corpuscles ; so the greatness of those virtues and the variety of those proprieties in particular may be ascribed to the peculiar nature of the impregnating liquors, to the diversity of them, and to the greater and lesser proportions, wherein they are mixt with the petrescent Juice.

Having made this Conjecture probable as to *Transparente* Gems, and withal occur'd to some specious Objections, he descends to make it out, that those Arguments, which he hath produced to prove, that Diaphanous Gems may be endow'd with Virtues by the Mineral substances they contain or are in part made up of, will hold more strongly as to *Opacous* ones : which he further confirms by four particular Arguments ; fetched *partly* from the great specifick Gravity of divers Opacous and Medicinal Stones ; *partly* from the fitness of his Hypothesis to render a reason of divers *phenomena* relating thereunto, some of them scarce at all, and others much less probably to be accounted for without it ; *partly* from the Metallin substances to be manifestly separated or obtained from the Stones he is treating of ; and *partly* from the Nature of the Bodies whereof Medicinal Stones seem to be compounded : In which last it is peculiarly observed by the Author, that the subtlety and penetrancy of some Liquors, if duly considered, may evince it to be possible, that such Bodies should be petrified by them and with them, as may in part consist of Animal and Vegetable substances ; as in petrified Skulls, Bones, and pieces of Wood. Besides, that not only there may be *Bolus's*, Sealed Earths, and such like fossils that are commonly known to be Medicinal, hardened into Stone by petrifying Agents ; but that also other Earths, subject to be petrified, may have Medicinal and subtle particles of such a kind in them, as scarce any body would expect : of which he alledges some notable Instances. But for them, and many other uncommon observables we must refer the Curious Reader to the Book it self.

M. Johannis Swammerdami M. D. *UTERI MOLIEBRIS Fabrica ; unà cum Methodo nova Cavitates corporis ita præparandæ, ut suam semper genuinam faciem servant.* Lugduni Batav. 1672. in 4<sup>o</sup>.

THE Publisher of these Tracts thinks himself obliged in a particular manner to do right to the Learned Author of this Book, as well upon the account of the matter contained therein, as his obliging way of dedicating it by a Letter of June 14. 1672. to the *Royal Society*; in the doing whereof he shews himself so generous and candid, as notwithstanding the present Rupture between the two Nations, *England*, and the *United Provinces* (of which latter he is a Subject) he scruples not solemnly to acknowledge, *Nescire se* (to give you his own words) *quo factum sit fato, ut, quemadmodum Christianus Orbis non minima Religionis sue incrementa Anglicæ genti debet; ita ultimis difficillimisquæ his temporibus apud Eam inventa sit ratio, quâ, missis inanibus Scholasticorum disputationibus, bonæ artes & scientiæ in solido losentur: Quod ipsum ut non postremam gloriæ Britannicæ partem absolvoit, ita in causa esse ait, ut in Naturalis Philosophiæ negotio ad nullam aliud quàm Regiæ Societatis Tribunal provocare vel ausit vel debeat.*

But to pass to the particulars of the matter it self, they are chiefly two: First, he comments upon the *Prodromus* of that famous Anatomist *D. Joh. Van. Horne*, printed 1668; treating *de partibus Generationis in utroque sexu*: Unto which he adds such things as himself had observed on that subject; not allowing to the said *Van Horne*, that the *Spermatick Artery* hath no cavity; denying the *Spermatick Vein* to agree any waies with the Scheme of *De Graaf*; affirming the processes of the *peritonæum* in men and women not to go beyond the *inguina*; observing that *De Graaf* is not well acquainted with the *ductus* of the veins and arteries in *testiculis*; doubting yet, where, and how the *vasa testicularia* do unite with the *præparantia*; denying, that the same *vasa testicularia* have a connexion with the *ductus Highmorianus*, and affirming them to be continued with the *Epididymis*; denying likewise, that the *vasa deferentia* have a communication with

with the *vesiculæ seminales*, against Dr. *De Graaf*; maintaining, that there is (not a threefold *Seed*, but) a threefold *matter of Seed*, if not a fourfold; taking notice of the admirable structure of the spermatick Artery in *Tauris*; mentioning divers curious particulars in *pene*; as also in the structure of the *vesiculæ seminales*, especially in *Moles*; offering to verifie his Schemes of the *Uterus muliebris*, here delineated, by the part it self; and excepting against those of *De Graaf*; animadverting in some figures of that accurat Anatomist, *Malpighi*, especially as to the Spermatick parts of the Male, and the Spinal Marrow; affirming positively, *testiculos mulierum instar ovarij esse, & structurâ suâ cum reliquis animantium ovaris convenire*; and withal examining the manner of the motion and passage of Eggs out of the *Ovarium* into the *Uterus*; which he finds as obscure in creatures that are by all acknowledged to be *Oviparous*, as in the other females; forasmuch as he cannot find any more connexion between the *Ovarium* and *Infundibulum* in Poultry, &c. than in Women: And if it have been observed, that in Hens the said *Infundibulum* hath with its membranous expansions embraced the *Ovarium*; he believes, that the same comes to pass in Women *tempore conceptionis*, and that then the *tuba Fallopiana*, being applied to the testicles, receives by its orifice the very Egg, that is to breed the foetus. Where he taketh special notice of *Frogs*, that at once lay many hundreds of Eggs, which do singly follow one another through the *ovr-ductus*; in which Creatures he meets with the same difficulty, since the orifice of the *tubæ* is not only near two inches distant from the *ovarium*, but also very straight, and withall seeming immovable, and un-applicable to that *ovarium*. He examines also that Observation of *Kerkringius* about a *fetus* of three daies old.

Moreover he promises, that he intends in his curious Anatomical Treatise, which he designs to publish, to restore to the Liver its office of Sanguification; wherein he promiseth to himself the greater applause, because none (as he saith) hath hitherto been able to shew, that the Chyle is conveyed so far as to the lacteous vessels *primi generis*, as he calls them: which makes him to esteem, that 'tis nothing but a whitish *lympa*, that appears in the lacteous veins, and issueth out of the glands  
of

of the Intestins, that receive their Juice from the Arteries.

After this he represents the *uterus humanus* in three very curious Schemes; one is of the *facies anterior*; the other of the *facies posterior uteri puerperæ*; the third, of an *uterus Virginis*.

Where he inserts a very odd History of the force of Imagination in breeding Women, which is this: That a woman at *Utrecht* in such a condition, being surpris'd with the sight of a *Negro*, and so exceedingly frighten'd as to become speechless for the time, had a strong fancy she should bring forth a black child; but, having recollected her self, did by as strong a fancy devise a remedy to defeat the former; which was with hot water to wash away that blackness. And having, whilst she was thoroughly possessed with this latter fancy, washed her self accordingly from top to toe; she was at length delivered of a child that was indeed white, yet those parts excepted, where the water in the washing had not touch'd; such as the interstices of the fingers and toes and some other places, where the manifest tokens of blackness appear'd; as this Author had been inform'd by the very Mother of this child.

The *second* main particular in this Book is, the Description of a way, so to prepare the Veins and Arteries and other hollow Vessels in an Animal, that they may appear in their genuine shape, whereby their structure, scite, ductus, insertion, rise, and the like, may clearly be seen. This way we shall give you at length in his own words; there being as yet but this one Copy, whence this account is given, in England, for ought we know.

*Recipe Cerae albae quantum videbitur, eamque liquefactam rubro, flavo, viridi, vel quolibet alio colore convenienti tinge; & siphone, qui cochleâ adstrictum tubulum habeat, properanter excipe, atque in majorem venæ vel arteriæ uteri ramam injice, cavendo ne intercedens Aer progressum cerae impediatur: Ac, ne quid impedimento sit, sanguinem, priusquam operi te accingas, ex venis quantum pote exprime, ut ut rami majores alias facillimè distendantur. Perinde autem est, si per Arteriam spermaticam sive hypogastricam Cera injiciatur: Idemque in venis obtinet, tantum ut valvula obtuso stylo pertundantur; quo facto unâ injectione omnes uteri venæ, earumque partes vel ab uno latere impleri possunt. Idem in Arteriis fieri potest, si tamen visibiles earundem Anastomoses satis magnæ sint, nec Aer progressum cerae impediatur.*

By

By this method he affirms to have laid open even the smallest ramifications of the *Arteria hepatica*, that cannot be bared of the flesh, and that are possibly more in number, than those of the *vena porta* and *cava* put together.

III. *Three Letters of Jo. Dominicus Cassinus, concerning his Hypothesis of the Suns motion, and his doctrine of Refractions; printed at Bononia in 4°.*

THE first Letter is in Latine, to *Geminian Montanarius*, publick professor of Mathematicks in *Bononiensi Archigymnasio*; who was calculating Ephemerides of the Suns place, according to the latter Hypothesis of *Cassinus*. His former Hypothesis was grounded upon Observations of the Sun, from whose Altitudes, when they were great, he made no Abatement; because, according to the common opinion, the Refraction is nothing, or, at least, inconsiderable. A specimen of it, was published about 16 years ago. But afterward he changed that Hypothesis, that it might agree with his observations as diligently made, but more artificially corrected. For, having *ex meris stellæ Polaris altitudinibus exactissimis* determined the height of the pole (and thereby of the Equinoctial,) at *Bononia*; he observed also the Suns meridian height in both Solstices. And subtracting that winter height from that Equinoctials height; and the said Equinoctials height from the Summer height, he alwaies found that former difference less, by above four minutes and an half, than the latter difference. Wherefore he attempted to order the Parallaxes and Refractions so, as that those Summer and Winter observations, being corrected according to that doctrine, might yield the Suns Southern greatest declination, equal to the Suns greatest declination Northward. In this Letter he sets down, What course he took to find the Refractions; What Experiments he made in glas and in water; How he applied them to celestial Refractions; His proceeding to determine the proportion of the height of the Air to the Semidiameter of the Earth; And at last to make Tables *ad singulos gradus apparentis distantie à vertice*. Those Tables make it evident, that *Refractiones etiam in astris altitudinibus sunt sensibiles, & ad verticem usque conscendunt*; which hitherto hath alwaies been denied. Not only his friends in Italy approve these Tables, but in France also. *Petrus Petit in præclaro opere, quod DE NUPERIS COMETIS*



*COMETIS scripsit ediditque, scilicet, Cassini Tabulas (refractionum) & rationibus & Experimentis esse conformes.*

But *Ricciolus*, in a late treatise *Astronomia reformatæ*, hath raised an Expectation of his new Tables of Refraction, and questions those Tables of *Cassinus*: Who, in this Letter, answereth his objections, and shews, how, by observations in *Heliometro*, we may try whose Tables are best.

The second Letter is in *Italian*, to *Carlo Rinaldini* Professor of Mathematicks in the University of *Padua*, dated *August. 7. 1666.*

In it, He shews some defect in the wayes of making Experiments of Refraction, prescribed by *Vitello*, *Des-Cartes*, *Riccioli* and *Manzini*. And then he describes an Instrument of his own invention for that purpose, &c.

The third Letter is in *Italian* also, but without date: concerning a book of *Dr. Mengoli*; wherein is a Table of Refractions for every degree of altitude. But *Cassinus* shews, that Table of *Mengoli* to be false; as being easily refuted by Experience, and grounded upon a wrong foundation. Most writers of Dioptricks since *Des Cartes* do agree with him, in acknowledging a constant Ratio in the Sines of the Angles considered in Refraction. But this Doctor *Mengoli*, mistaking those Angles, hath cast away a great deal of labour in calculating so many Refractions, and so making a Table full of false numbers. But *Cassenus* hopeth, that *Signor Mengoli* will review his Principles, and put true ones in their room, that so beginning anew he may reform the Conclusions, which he intended to demonstrate.

IV. *Dr. Richard Sharrock's History of the Propagation and Improvement of VEGETABLES; by the Concurrence of Art and Nature. The 2d Edition much enlarged. Oxford, 1672. in 8º.*

THIS Treatise sheweth the several wayes for the Propagation of Plants usually cultivated in *England*, as they are increased by Seed, Off-sets, Suckers, Trowncheons, Cutting, Slips, Laying, Circumposition: The several wayes of Graftings and Inoculations; as likewise the Methods for improvement and best culture of Field, Orchard and Garden-plants; the means used for remedy of Annoyances incident to them; together with the Effect of Nature, and her manner of working upon the several endeavors and operations of the Artist. Written according to Observations made from Experience and Practice. Amongst the many considerables in it, there is an Examination of *Sr. Ken. Digby's* reports, and other stories of great fame.

*Errata in Numb. 83. p. 4060. l. 16, and l. 28. r. refraction for reflexion. p. 4075. l. 26. and l. 33. r. useful for ferns.*

LONDON, Printed for J. Martyn, Printer to the Royal Society, 1672.